

10. [10 points]

- a. [5 points] Determine whether the following series converge or diverge (circle your answer). For each, justify your answer by writing what convergence rule or convergence test you would use to prove your answer. If you use the comparison test or limit comparison test, also write an appropriate comparison function.

1. [2 points]

$$\sum_{n=1}^{\infty} (-1)^n \frac{2^n}{n^2}$$

Converge

Diverge

2. [3 points]

$$\sum_{n=1}^{\infty} \frac{3n - 2}{\sqrt{n^5 + n^2}}$$

Converge

Diverge

- b. [5 points] Does the following series converge conditionally, absolutely, diverge or is it not possible to decide? Justify.

$$\sum_{n=1}^{\infty} (-1)^n \frac{1}{n(1 + \ln(n))}$$